NON-PUBLIC?: N
ACCESSION #: 9508180077
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Donald C. Cook Nuclear Plant - Unit 1 PAGE: 1 OF 3

DOCKET NUMBER: 05000315

TITLE: Reactor Trip Due to Turbine Trip On Loss Of Condenser Vacuum
EVENT DATE: 07/14/95 LER #: 95-003-00 REPORT DATE: 08/14/95

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: William Nichols, Operations Superintendent x2536 TELEPHONE: (616) 465-5901

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At O426 hours on July 14,1995, while at 100 percent Rated Thermal power, Unit 1 received a reactor trip signal as a result of a turbine top due to low condenser vacuum. The cause of the loss of condenser vacuum was a broken weld on the 1 inch drain trap bypass for steam dump valve 1-URV-110 into the "A" condenser. The break was at the socket to pipe weld joint and completely separated the pipe from the fitting, allowing air to be admitted into the "A" condenser and vacuum to decrease beyond the trip setpoint.

All safety systems operated normally in response to the top signal. With the exception of the failure of bleed steam to feedwater heaters 5B and 6B to automatically isolate due to a defective relay, all post reactor trip responses were normal. The unit was stabilized in Mode 3, Hot Standby, and repairs were performed. This event was determined to have

no actual or potential adverse effect on the health and safety of the public.

END OF ABSTRACT

Conditions Prior to Occurrence:

Unit 1 in Mode 1 (Power Operations) at 100 percent Rated Thermal Power near the end of the fuel cycle.

Description of Event

At 0426 hours on 7-14-95 while at 100 percent power, Unit 1 received a reactor trip as a result of a turbine trip due to low condenser vacuum. The cause of the loss of condenser vacuum was a broken 1 inch line on the drain trap bypass for steam dump valve 1-URV-110 into the "A" condenser. The break was at the socket to pipe weld joint and completely separated the pipe from the fitting allowing air to be admitted into the "A" condenser.

Increased Steam Jet Air Ejector (SJAE) flows were seen prior to the trip. The SJAEs were in a normal line-up, with the SJAE air offtake crosstie valves closed and the "A" condenser and the feedpump condensers connected to the same SJAEs. Vacuum was lost first in the "A" condenser, then in the West Feedpump condenser and finally in the East Feedpump condenser.

Eight minutes elapsed from the time of the condenser "A" low vacuum alarm was received at 24.3" Hg vacuum and the turbine trip at 21.8" Hg vacuum. During this time the operators attempted to pinpoint the source of the vacuum loss, by verifying alignment of the steam seals, SJAEs, Circulating Water Pumps, condenser vacuum breakers and condenser water boxes. All line-ups were normal and the source of the inleakage could not be located.

After the reactor trip condenser vacuum slowly returned to its normal value due to steam flow in 1-URV-110, which stopped the flow of air into the "A" condenser.

It was noted, after the trip, that bleed steam to feedwater heaters 5B and 6B did not automatically isolate and were manually closed. Turbine trip relay 1-5-TVT4, which serves to close bleed steam valves 1-HMO-502 and 1-HMO-602, was found to be defective and replaced. All other post reactor trip responses were normal, and the unit was stabilized in Mode 3, Hot Standby.

Cause of the Event:

Fatigue related mechanisms, due to vibration, initiated a crack at the toe of the socket weld connecting the 1 pipe to the sockolet fitting attached to the large-bore pipe. Further propagation of the crack caused the 1" pipe to separate from the sockolet. No evidence of corrosion or flow-assisted corrosion was evident at the location of the failure.

Analysis of Event:

This event is being reported per 10 CFR 50.73(a)(2)(iv) as an event that resulted in automatic actuation of Engineered Safety Features (ESF), including the Reactor Protection System (RPS).

A reactor trip occurred when the main turbine topped above 10 percent Rated Thermal Power on a Main Turbine Low Condenser Vacuum trip. All control rods fully inserted, both Motor Driven Auxiliary Feedwater Pumps started, and a feedwater isolation occurred; all as designed.

Normal offsite power was available and the emergency diesel generators were in standby. The East Containment Spray Pump was being returned to an operable status prior to the trip, and no other safety equipment was out of service. This event did not have any actual or potential adverse impact on the health and safety of the public.

Corrective Action:

The weld repair for the bypass line around 1-URV-110 was completed and turbine trip relay 1-5-TVT4 was replaced on July 17, 1995. A liquid penetrant examination was performed on the similar lines for the other eight steam dump valves in Unit One. During this inspection, a surface crack was discovered on a weld for the bypass line of 1-URV-112. This weld was repaired in a similar manner as the weld on URV-110. No other defects were noted by the penetrant exams.

The Unit Two steam dump bypass lines were also inspected. A preliminary visual exam to accessible areas did not detect any areas of concern, however, a more detailed surface exam will be conducted during the next Unit Two Refueling outage.

Failed Component Identification:

N/A

Previous Similar Events:

None

ATTACHMENT TO 9508180077 PAGE 1 OF 1

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AEP
INDIANA
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POWER

August 14, 1995

United States Nuclear Regulatory Commission
Document Control Desk
Rockville, Maryland 20852

Operating Licenses DPR-58
Docket No. 50-315

Document Control Manager:

In accordance with the criteria established by 10 CFR 50.73 entitled Licensee Event Report System, the following report is being submitted:

95 - 003 - 00

Sincerely,

A. A. Blind
Plant Manager

/clc

Attachment

c: H. J. Miller, Region III
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